

CLAIMS

What is claimed is:

1. A valve seat assembly for a control valve of a vehicle brake system, said valve seat assembly comprising:

a valve seat body, said valve seat body having a valve passageway extending through a portion of said valve seat body, a groove formed circumferentially in an outer surface of said valve seat body, said groove defining a groove surface substantially parallel to an axis of said valve body, a bore extending between said groove surface and said valve passageway to provide fluid communication between said groove surface and said valve passageway; and

a substantially resilient seal disposed in said groove of said valve seat body.

2. The valve seat assembly according to Claim 1, wherein said groove surface is substantially cylindrical.

3. The valve seat assembly according to Claim 1, wherein a plurality of bores extends between said groove surface and said passageway.

4. The valve seat assembly according to Claim 1, wherein an axial length of said groove is greater than an axial length of said seal.

5. The valve seat assembly according to Claim 1, wherein said groove surface defines a first groove surface, said groove further including a second groove surface adjacent said first groove surface, said second groove surface being disposed at an acute angle relative to said first groove surface.

6. The valve seat assembly according to Claim 5, wherein said second groove surface extends from said first groove surface to said outer surface of said valve seat body.

7. The valve seat assembly according to Claim 5, wherein said second groove surface is disposed at an angle within the range of from about 40 degrees to about 50 degrees relative to said first groove surface.

8. The valve seat assembly according to Claim 5, wherein said groove further includes a third groove surface adjacent said second groove surface, said third groove surface being disposed substantially perpendicular relative to said first groove surface.

9. The valve seat assembly according to Claim 1, wherein said seal is a lip seal.

10. The valve seat assembly according to Claim 1, wherein said groove, said bore, and said seal define a flow path between a vehicle brake and a vehicle master cylinder.

11. A control valve for controlling fluid flow in a hydraulic control unit, said control valve comprising:

a valve body, said valve body comprising a first body portion and a second body portion adjacent said first body portion, a valve passageway being formed through said first and said second body portions, said second body portion including:

a groove formed circumferentially in an outer surface thereof, said groove defining a groove surface substantially parallel to an axis of said valve body, a bore extending between said groove surface and said valve passageway to provide fluid communication between said groove surface and said valve passageway; and

a substantially resilient seal disposed in said groove of said second body portion;

an armature slidably received in said valve bore of said first body portion; and

an electrical coil disposed about said valve body for selectively inducing a magnetic flux in said armature.

12. The valve seat assembly according to Claim 11, wherein said groove surface is substantially cylindrical.

13. The control valve according to Claim 11, wherein a plurality of bores extends between said groove surface and said valve passageway of said second body portion.

14. The control valve according to Claim 11, wherein an axial length of said groove is greater than an axial length of said seal.

15. The control valve according to Claim 11, wherein said groove surface defines a first groove surface, said groove further including a second groove surface adjacent said first groove surface, said second groove surface being disposed at an acute angle relative to said first groove surface.

16. The control valve according to Claim 15, wherein said second groove surface extends from said first groove surface to said outer surface of said second body portion.

17. The control valve according to Claim 15, wherein said second groove surface is disposed at an angle within the range of from about 40 degrees to about 50 degrees relative to said first groove surface.

18. The control valve according to Claim 15, wherein said groove further includes a third groove surface adjacent said second groove surface, said third groove surface being disposed substantially perpendicular relative to said first groove surface.

19. The control valve according to Claim 11, wherein said seal is a lip seal.

20. The control valve according to Claim 11, wherein said groove, said bore, and said seal define a flow path between a vehicle brake and a vehicle master cylinder.

21. A hydraulic control unit (HCU) for a vehicle brake system, said HCU comprising:

an HCU housing defining an HCU bore; and

a control valve mounted in said HCU housing, said control valve including: a valve body, said valve body comprising a first body portion and a second body portion adjacent said first body portion, a valve passageway being formed through said first and said second body portions, said second body portion including:

a groove formed circumferentially in an outer surface thereof, said groove defining a groove surface substantially parallel to an axis of said valve body, a bore extending between said groove surface and said valve passageway to provide fluid communication between said groove surface and said valve passageway; and

a substantially resilient seal disposed in said groove;

an armature slidably received in said valve passageway of said first body portion; and

an electrical coil disposed about said valve body for selectively inducing a magnetic flux in said armature.

22. The valve seat assembly according to Claim 21, wherein said groove surface is substantially cylindrical.

23. The hydraulic control unit according to Claim 21, wherein a plurality of bores extends between said groove surface and said valve passageway bore of said second body portion.

24. The hydraulic control unit according to Claim 21, wherein an axial length of said groove is greater than an axial length of said seal.

25. The hydraulic control unit according to Claim 21, wherein said groove surface defines a first groove surface, said groove further including a second groove surface adjacent said first groove surface, said second groove surface being disposed at an acute angle relative to said first groove surface.

26. The hydraulic control unit according to Claim 25, wherein said second groove surface extends from said first groove surface to said outer surface of said valve seat body.

27. The hydraulic control unit according to Claim 25, wherein said second groove surface is disposed at an angle within the range of from about 40 degrees to about 50 degrees relative to said first groove surface.

28. The hydraulic control unit according to Claim 25, wherein said groove further includes a third groove surface adjacent said second groove surface, said third groove surface being disposed substantially perpendicular relative to said first groove surface.

29. The hydraulic control unit according to Claim 21, wherein said seal is a lip seal.

30. The hydraulic control unit according to Claim 21, wherein said groove, said bore, and said seal define a flow path between a vehicle brake and a vehicle master cylinder.